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SCIENCE

FRIDAY, NOVEMBER 15, 1912

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THE NEED OF PRACTICAL COOPERATION OF EDUCATIONAL AND OF MEDICAL DEPARTMENTS IN MODERN UNIVERSITIES

THE object of this paper is, first, to show the present status of affiliation of schools or departments engaged respectively in the training of physicians and of teachers, and secondly, to present a plea for a more general and effective cooperation between medical and educational departments where the interchange is warranted by technical training and material resources in both departments. Herein we are concerned particularly with the training of teachers pursuing at least a four years' course in a good college or university department of education and also, on the medical side, with the supplementing of the training of prospective physicians who intend to participate in the work of the schools.

Our general topic suggests the whole field of modern sanitation as it concerns not only the teacher and the medical inspector, but also the engineer, economist, etc., a field into which more than one of our universities have entered. We shall consider only hygiene and related topics as mainly affecting the teacher, superintendent, principal and the medical inspector, school nurse and assistants.

The actual status of the affiliation between medical and pedagogical departments of universities in the United States is revealed in the results of inquiry instituted by the writer in March, 1912. A circular of inquiry, including stamped return envelope, sent through the Newcomb School of Education, was mailed to the deans re-

spectively of every medical department or college and of every educational department in the United States, according to the enumeration in the U. S. Educational Report. Homeopathic, eclectic, physio-medical colleges, etc., were omitted.

H. SOPHIE NEWCOMB MEMORIAL COLLEGE
THE TULANE UNIVERSITY OF LOUISIANA
NEW ORLEANS

March 7, 1912

Dear Sir:

I am attempting to obtain definite information concerning the present affiliation of the medical and the pedagogical departments of typical American universities. Will you kindly cooperate to this end by responding to the following questions and return this sheet in the enclosed envelope?

I. (a) What courses intended specifically for teachers or prospective teachers (elementary, high, normal school or college teachers and principals or superintendents) are being offered by your medical department? (b) Duration of courses? (c) Number enrolled this year? (d) Any certificate or diploma awarded for completion of same by teachers or prospective teachers?

II. (a) What courses in pedagogy are offered by your department of pedagogy or education for the benefit of physicians or medical students or nurses who are or intend to become inspectors of schools? (b) Duration of courses? (c) Number enrolled this year? (d) Any certificate or diploma awarded for completion of same by physicians, medical students or nurses?

III. Please write any other relevant information or practical suggestion regarding possible need for cooperation between medical and pedagogical departments.

Yours very truly,

DAVID SPENCE HILL

To the medical colleges 112 inquiries were sent out, and to date 69 responses have been received. To departments and schools of education 102 responses are at hand from 160 inquiries—many of them sent in both instances to very small institutions.

The responses may be generalized into the following groups:

1. Those from medical colleges which

have no university connections and which report no work whatever for the benefit of prospective teachers.

2. Responses from educational departments within colleges and universities which have no medical departments and which offer no work especially intended for medical inspectors, school nurses or school sanitarians.

3. No active affiliation reported from medical and from educational departments of certain universities.

4. Active or pending affiliations and co-operative courses in medical and educational departments, where prospective teachers with adequate academic and professional training and prospective physicians hold common interests.

5. Individual opinions and suggestions concerning the need of such affiliated courses.

Most of the responses are of types 1, 2 and 3. It is evident that so far as formal action by our institutions of learning is a criterion, the training of the majority of physicians and teachers in colleges is not parallel or merged and generally there is no point of practical contact. In view of the Carnegie report on medical education, and in view of the struggling existence of the courses of education, especially in normal schools, and to a less degree in college departments of pedagogy, this status of affiliation in some respects is satisfactory, although the correlated facts are deplorable. Scarcely a half dozen universities in the United States report a reasonably effective scheme for cooperation of medical and of educational departments. In view of the needs about to be enumerated and of a growing conviction that teachers need more scientific knowledge of hygiene in its broader sense, more knowledge both of mental processes and of the physiology of the child, as well as of the subject to be

taught, and that physicians who are medical inspectors are often lacking in adaptability, understanding and are actually incompetent without a sound basis of educational science—this failure of the prospective teacher and the prospective doctor to get together is unfortunate for both and for the child. Furthermore, there is a growing suspicion that one of the factors in the low state of medical education is the poor teaching done within the walls of medical colleges and the poorer grasp of the complex problems of the education of to-day. This is a day, in America and Europe, for the professional training of teachers; but who has heard of systematic provision for training teachers of medical students?

Nearly all of the small number of responses of groups 4 and 5 may be reproduced here verbatim, with a few of other types. As these responses are generally from representative institutions they constitute an interesting symposium. A few responses which came unsigned are omitted. A later mail may bring in also a few more. Here are the responses from the following institutions in slightly abbreviated form and with the name of the senders prefixed: Johns Hopkins, Pennsylvania, Chicago, Teachers College of Columbia University, University of Pittsburgh, University of Cincinnati, St. Louis University School of Medicine, the University of Minnesota, the University of Wisconsin, the State University of Iowa, the University of Illinois, the University of Nebraska, the University of Michigan, the George Washington University, Vanderbilt University, University of Virginia, the Tulane University of Louisiana.

Johns Hopkins University, Baltimore, Md. Dean J. W. Williams, Medical Department.

Your circular concerning the affiliation

of medical and pedagogical departments of American universities is at hand. Our medical school makes no effort to give this sort of instruction. The philosophical department of the university, however, offers a number of courses to teachers and in its summer school affords opportunity for instruction. Furthermore, a number of "health courses" are offered to the general public by the medical and surgical faculty of Maryland (The State Medical Association).

Professor E. F. Buchner, Department of Education and Philosophy.

I regret to state that we have nothing to report from the Johns Hopkins University on the cooperation between the medical department and the various lines of work which are being offered to teachers. For one reason at least the need of this cooperation in Baltimore is not so essential, in view of the fact that the medical and surgical faculty in addition to the several medical schools and medical associations, has been doing a great deal of work along the line of the medical aspects of public education.

University of Pennsylvania, Philadelphia, Pa. Director A. C. Abbott, of the Laboratory of Hygiene.

I have read the several questions contained in your letter, and do not feel in a position to give categorical answers to any or all of them, although one of the courses given in this laboratory might be regarded as remotely related to the topic which you are considering. The course to which I allude is that leading to the degree in public hygiene, a subject that has been sadly neglected in this country, and one for which trained teachers are more or less in demand. I can not say, however, that the course is designed especially for the training of teachers, but rather with the idea of giving to the candidate a broad grasp of

the fundamentals of the subject in such a manner that they may be used for either teaching or practical work in the field of public hygiene. There is one portion of the course, I think, which might properly be regarded as suitable to teachers in any department, notably, that having to do with the various defects observable in school children. It is the portion of the course designated as medical inspection of school children.

Harvard University, Cambridge, Mass.

Dean Henry Christian, Dean of Medical College; Professor Henry W. Holmes, Division of Education.

No affiliation of the Medical and Pedagogical Departments of this university.

The University of Chicago, Chicago, Ill.

Dean John M. Dodson, The Medical Courses.

There are no courses specially designed for teachers or prospective teachers in the biological sciences department where the medical courses are taught. Many teachers, however, take some of these courses each year, how many it is not possible to say accurately.

I am mailing to your address an announcement of Rush Medical College, in which you will find all the courses described. I would say that a few teachers expecting to go into physical-culture work take the courses in human anatomy. Others do work in physiology, pathology and bacteriology. No certificate or diploma is given to students completing these courses. They may be taken by students registered in various departments of the University of Chicago and allowed to count for credit towards the bachelor's degree.

We hope that the several departments in the university will offer courses relating to hygiene and sanitation and that we may be able to offer a definite curriculum designed for men and women who desire to

go into the public health service. At present no such courses are offered.

Chicago University, Chicago, Ill. Director

Charles H. Judd, the School of Education.

There is no active affiliation between the college of education and the medical school. One of the members of our faculty is finishing his work in a medical course in Munich, Germany, during the present year, and expects to take up work for retarded children with the opening of school for next year. This work will be done, however, in the college of education and not in the medical school. I think some such affiliation as you have in mind would be of very great advantage, but we do not have it as a matter of fact at the present time.

Teachers College, Columbia University, N. Y. Dean James E. Russell.

We have no connection with the school of medicine. However, the professor of physiological chemistry directs our work in that line. We have large departments of our own in hygiene, nursing and health, etc. Please see announcement sent herewith.

The University of Pittsburgh, Pittsburgh, Pa. Professor W. G. Chambers, the School of Education.

None in medical department. Certain teachers in the city schools have taken courses in physiology, bacteriology and the like with the regular medical classes. Plans are now being developed looking to a cooperation of courses between the school of medicine, the school of education and the college. In the school of education our courses, psychology and principles of education, school hygiene, psychology and pedagogy and defective children and the like, are open to medical students, but have not been attended by any to date. We are planning to offer a course for the training of school nurses which will in-

clude work in both the medical school and the school of education. We are now about to start a group of clinics, involving a psychological clinic, a social clinic, a medical clinic and a dental clinic, which will bring together the four corresponding schools of the university in a work which affects the training of teachers. A certificate will be granted for the work mentioned.

University of Cincinnati, Cincinnati, Ohio.

Dean W. P. Burris, College for Teachers.

We have no such affiliation between the medical and pedagogical departments as you imply. I have often thought about the question of relating these departments, but could not decide how it could be brought about. I will be much pleased to learn the result of your inquiry. I have no doubt that teachers and instructors would profit greatly by some correlation of medical and pedagogical courses.

St. Louis University School of Medicine, St. Louis, Mo. Dean E. P. Lyon.

Your circular letter regarding the teaching of pedagogics in St. Louis University came to the medical school. As we have no such work in this department, I am referring the letter to the college department in which young men are trained for teaching in the Jesuit order. I have no doubt you will hear from the authorities in regard to this work. In writing you, I am reminded of a thought which has frequently recurred to me, namely, there is no normal or teachers' college for medical teachers. I believe that medical teaching has need of application of pedagogical principles. It is possible that people who are specifically engaged in the work of teachers' colleges might be of some assistance to medical education by studying these questions.

The University of Minnesota, Minneapolis,

Minn. Dean F. F. Wesbrook, College of Medicine and Surgery.

We shall have to answer most of your questions in the negative, but we desire you to know that we have thoroughly considered and are planning for the various phases of public health instruction. In answer to your question number 1, we have to say that certain of the teachers on the staff of this college are giving instruction to students in the college of education—notably Dr. R. O. Beard, on personal hygiene. I myself give instruction in the matter of infectious diseases and their prevention and have every year for some years tried to give practical talks along these lines. We are, however, giving no courses in the college of medicine and surgery as such, which are intended for students in the college of education. All of the students in the college of education attend the instruction by Dr. Beard and myself. No definite courses in pedagogy are offered to the students in our college, but you will see in the catalogue of the current year, pages 58 *et seq.* We provide a coordinated series of lectures by those who are well able to give the work. For instance, Dr. Keene, who is in charge of the physical training and medical school-inspection of the Minneapolis public schools, instructs our students in medical school inspection, physical training and school hygiene. Mr. Rankin, professor of education in our university, and Mr. C. G. Schulz, state superintendent of public instruction, and *ex-officio* a member of our board of regents, both give instruction to our medical students in their senior year in this course of which I have spoken; one from the view-point of the teacher and the other from the point of view of the child. In this way we get a symposium by those whose daily work is giving them practical experience in the lines which we ask them

to teach our students. We have similar symposia on the tuberculosis question. I enclose herewith copy of that which was given this year. The same sort of thing is done in the matter of milk supply, its sanitary aspects, etc. At the present time I have been instructed by the board of regents to report upon a public-health school here in our university and expect to report a definite mechanism within the next short time.

Dean George F. James, College of Education.

We have not yet worked out a plan of cooperation between our medical college and the college of education, although we are interchanging some lectures at the present time. Some of the medical faculty have been assisting in our work in school hygiene and some of our men have been speaking occasionally to the medical students on conditions which seemed helpful for them to know in regard to the schools. *The University of Wisconsin, Madison,*

Wis. Dean M. V. O'Shea, Department of Education.

In this department none whatever, although I earnestly hope such courses may be offered within the next two or three years.

Dean Charles R. Bardeen, Department of Pharmacology and Toxicology.

In the department of physiology a special course is offered for prospective teachers of that subject in high schools, normal schools or colleges. In the department of anatomy a special course is offered for students preparing for teaching physical training. In the department of bacteriology and hygiene courses are offered in these subjects open to teachers. In the other departments of the medical school no specific teachers' courses are offered, although occasionally special training is given individuals who may desire to teach. So far as

I know, no courses are offered in the department of pedagogy for the benefit of physicians or medical students, or nurses who are or intend to become inspectors of schools. Many of our medical students do some teaching after completing the two years of the medical work which we offer before going elsewhere to complete their medical course. All such prospective teachers, if they intend teaching in Wisconsin, have to take some courses in the departments of education on the principles of pedagogy. In general I should say that public school teachers should have more acquaintance with preventive medicine than most of them have at present, and that we should probably look forward here to developing special training of this character, although little is done at present. I shall be glad to hear the results of your inquiries in order that we may have data from which to derive methods along these lines. I feel that we have at the University of Wisconsin, at the present time, little along these lines which would be of value to you.

The State University of Iowa, Iowa City, Iowa. Director Frederick C. Bolton, the School of Education.

I regret very much that we have no satisfactory data to report concerning the relation between the college of medicine and the department of education. There is an entirely cordial feeling existing between the faculty in the medical college and the department of education. Several of the faculty members are much interested in our work in education, and we are certainly interested in many phases of their work. There is a movement on foot to establish a psychopathic hospital, the activities of which will include some phase of educational work. It will include the training of defective children. Some of the members of the faculty of the college

of medicine are directly interested in the pedagogical side of the work. It may be that at a later time I can write you additional information concerning our work. I believe there ought to be a definite relation and there ought to be a pedagogical training for those who are preparing to be school physicians, on the one hand, and, on the other hand, the regular teachers ought to get some knowledge of psychopathic conditions.

The University of Illinois, Urbana, Ill.

Dean William E. Quine, College of Medicine.

Reports "none" for the questions.

The University of Nebraska, Lincoln, Nebr.

Acting Dean Robert H. Wolcott, College of Medicine.

Cooperation between the pedagogical department of the university and the medical school is a thing very much to be desired. We have discussed the matter here somewhat and a certain amount of cooperation has been effected by the formation of a section on public health in the State Teachers' Association, the activity of which is largely the activity of the college of medicine, and also by the giving of occasional lectures in the course of pedagogy by those connected with the faculty of the college of medicine. A condition which has interfered somewhat with close cooperation is the fact that our medical school is divided, the two clinical years, including the courses in sanitation and hygiene, being given in Omaha, and the first two years consisting entirely of laboratory work, being given here. Not only are the members of the faculty here in Lincoln engaged in teaching subjects not particularly important to the students in pedagogy, but the work already required of them is so heavy that I do not feel it fair to impose an additional course upon them.

The University of Michigan, Ann Arbor,

Mich. Dean V. C. Vaughan, Medical Department.

A course in general hygiene given in the medical department of this university is open to all students in the literary department, and is especially recommended for those who intend to teach. Every student entering the university should have a thorough physical examination, and it would be better if this examination could be repeated once a semester. In all departments of the University of Michigan except the law department, all entering students are compelled to take a thorough physical examination. Any defects are referred to the physicians in the medical department. Students in the medical department are required to pass a physical examination once a semester.

The George Washington University, Washington, D. C. Dean Bowden, Department of Medicine.

We have no courses in the department of medicine of this university intended especially for teachers or prospective teachers. There is a teachers' college which is a department of the university in which instruction is especially given to teachers and some of these students take courses in physiology and histology in our laboratories. Up to the present time the above method, namely, of having students in the teachers' college taking such courses as they desire in our medical school appears to have covered all requirements.

Vanderbilt University, Nashville, Tenn.

Dean Dudley, Medical Department.

No educational department.

University of Virginia, Charlottesville, Va.

Dean Whitehead, the Medical Department.

No such courses offered by this department.

University of Texas, Austin, Texas. Dean

W. S. Sutton, Department of Education.

None, but in the course in school management and also in a course of school administration and supervision some attention is given to matters relating to school hygiene. In the further expansion of the department of education in the University of Texas it is hoped that provision will be made for the establishment and maintenance of a school of physical education, in which school a number of courses will be conducted.

Leland Stanford Junior University. Executive Head R. L. Miller, Department of Medicine, San Francisco, Cal.

The courses for medical students in physiology, anatomy, chemistry, bacteriology and embryology are all given immediately at the university. Many students from the educational department take them and all can do so if they have proper preliminary work. Certificates or diplomas are awarded only as parts of the work leading to the university degrees. In the educational department about 30 students take course 28, physical aspect of the child (Professor Terman); and about 50 take course 29, school hygiene (Professor Terman). A few of these will later complete a medical course and take up school hygiene as a profession.

The Tulane University of Louisiana, New Orleans, La. Dean Dyer, Medical Department.

None at present. Projected courses for teachers and prospective teachers in department of hygiene and preventive medicine.

Professor Hill, Psychology and Education.

Arrangements are nearly completed whereby candidates for the B.A. degree in education, prospective teachers, may elect hygiene for their major subject. The work in hygiene will be partly under the direction of Professor Creighton Wellman, of the school of tropical medicine and hygiene.

The administrators also have made an appropriation for a laboratory of psychology for Newcomb College, an adjunct of which will be a psychological clinic for the study of the problems of childhood. In this work members of the medical staff, it is intended, will cooperate with psychologist, teacher and sociologist. The work of the laboratory begins in 1912.

The reasons for the advocacy of a more effective cooperation of physicians and teachers within such departments may now appear from consideration of several aspects of the subject. The basis of modern teaching is experimental and genetic psychology. The need of contact between physician and teacher in the study of scientific psychology is recognized in the problem of psychopathic conditions of childhood. Dr. J. E. Wallace Wallin in a recent number of the *Journal of Educational Psychology* has summarized the data concerning the growth of clinics for the study of psychopathic conditions in school children. In these educational laboratories psychologists, physicians and educators unite in studying the problems of the exceptional child whose unprovided for presence in our schools is to-day potent in affecting the lives of the majority of the pupils and the teacher. Notable among such institutions are Professor Goddard's laboratory at Vineland, N. J., Professor Witmer's clinic at the University of Pennsylvania, Dr. Healy's in Chicago and the Psychological Clinic conducted by the Gatzert Foundation for Child Welfare of the University of Washington, as well as others existing or projected. The recent discussion participated in by Myer, Watson and others in Washington during the meeting of the American Association for the Advancement of Science concerning the relation of the psychology of the academic department to the work of the medi-

cal schools, evinces this issue before the medical college, an issue which concerns both pedagogy and medicine. The unity of mutual interests in the field of pedagogy is pressing both upon the educator and upon the physician.

There is the increasing recognition by our citizenship of the importance of the physical aspects of life in the process of education. This modern recognition of the physical correlate of psychic life is evinced by many signs. There are the concerted efforts of legislators, reformers, physicians and educators in behalf of better sanitation of the schools. There are movements for improved medical inspection of children, teachers and premises, for accumulative records concerning physical and mental development and for study of, and providing for, the detection and care of, feeble-minded children. Organizations such as medical associations, educational associations and civic societies have united in their efforts in behalf of the health of the child, since the larger meaning of health in its relation to formal education has become better understood. It is significant, for example, that we read of the cooperative efforts of physicians and of educational specialists in the report of the Public Health Educational Committee of the American Medical Association as published in the Proceedings of the National Education Association. Equally significant as a symptom is the report of the sub-committee of the Committee of One Hundred of American Medical Association which recommends for medical education, in behalf of public sanitation, practical means for actual cooperation of physicians, lawyers, engineers, statisticians, professional sanitarians and educators. With regard to the last the recommendations embody the following: "The medical point of view should be given to the educationalists and the medical man should add to his medical

knowledge some practical working experience in the daily problems which confront the educator."

The increasing literature both from students of education and also of medicine concerning the health of the school child, and the discussions by both teachers and by physicians at international and at local congresses of school hygiene also are evidences of the world-wide significance of the theme. Researches upon specific activities of school life as affecting the human organism, in both its physical and psychical aspects, are further evidence of the advent of the method of science into the realm of pedagogy. Contrast, for example, the obsolescent pedagogy of opinion *vs.* fact, of metaphysics *vs.* statistical investigation, with such recent quantitative investigations as those of Meumann, Winch, Thorndike, Dearborn and Ayres. If in the past educators have been addicted to metaphysics and the didactic habit, equally physicians have been alleged to lack any "quantitative sense." The present trend in literature toward exact observation is bringing both professions closer.

The remarkable growth of medical inspection of school children is due to the wide recognition of the necessity of cooperation between teacher and physician. At the basis of this cooperation is the modern belief that health, wholeness of body and mind, is the prerequisite of maximum good for the individual and for society in education. Most of us have reacted far from the ideal of Stylites who considered that superlative moral excellence was best gained through indifference and even torture of the body:

. . . I die here

To-day, and whole years long, a life of death,
Bear witness, if I could have found a way—
And heedfully I sifted all my thought—
More slowly painful to subdue this home,
Of sin, my flesh, which I despise and hate
I had not stinted practise, O my God!

The practical interdependence of body and mind is evident enough whether we chose evidence from: the facts (1) of common experience, (2) of pathology or from (3) the psychological laboratory. But in the past many, and in the present not a few, educational leaders seem to neglect this significant fact. They have busied themselves with the subtleties of metaphysical speculation to explain the ultimate nature of this mind-body relation, or failed altogether to profit by the opportunity for, and the results of, research, regardless of the ultimate nature of reality. Whether as physician one is interested predominately with the physical aspect of the human organism, or whether as teacher predominately with the mental aspect, neither skilled teacher nor physician today can ignore the physical or the mental to the neglect of the other. So far as both teacher and physician are men and humanitarians, each is willing to supplement the other where cooperation facilitates the progress of the race. Notwithstanding the endless differences of opinion about the details of educational theory, and the rumor that in their respective councils both doctors and pedagogues disagree, nevertheless one sure point of agreement in education is the necessity for adequate provisions for health, both in school and in industry. The health movement in education is one of the most hopeful signs of the times; it is based upon the logical results of experience and of systematic observation and has more far-reaching results than the results merely within the school room. It is a beneficent influence that is modifying architecture, sewerage systems, food supply, methods of control and prevention of disease, and is modifying our art, our ethics and our religion, man's three great remedies for the evils of human knowledge. Opposed we find

the horde of the "curists," whether simply ignorant or neurotic or criminal.

The cooperation of trained workers in the medico-pedagogical field has gained headway against difficulties. Inertia of public opinion, administrative difficulties and organized opposition from combinations of quacks, enthusiasts and patent-medicine interests opposed to state control of health measures, are difficulties encountered in many states. One of the most vicious combinations of heterogeneous frauds is the American Association for Medical Freedom, which through paid representatives has been perniciously active in efforts with legislative assemblies, as, for example, recently in Tennessee.

Difficulties of another kind are: (1) incompetent and unintelligent physicians in the public-school services; (2) incompetent and unintelligent teachers; (3) the resulting failure to obtain the desired cooperation of a scientific pedagogy and of scientific medicine in behalf of the school child. The incompetency of the school physician, if we take for granted his moral worth, may be with regard to training either in medicine or in pedagogy. The Flexner and other reports are proofs regarding the low condition of medical education in America. It is difficult throughout the country to secure highly skilled physicians to do the unremunerative work of school inspection. This notorious difficulty increases the want of respect that the teacher and citizen have for some medical inspectors, school physicians and sanitarians. The deficiency of the average physician in pedagogy, or in the science and art of education, is not unexpected, but his frequent lack of appreciation of the inherent complexity of the problems of the school or of knowledge of any one large part of modern pedagogy, be it educational psychology, experimental pedagogy, the

history of education, the principles of education, educational statistics and quantitative treatment of data, lessens both his working efficiency and the respect and influence which his work should bring. If we couple with this two-fold incompetency an air of wisdom and the trick of silence in the medical inspector, it then results that he gains the contempt of the men and women in education who may have enjoyed thorough academic and professional training for their life work. Personalities being equal, the man who has his doctor of philosophy in education from a modern university following the requisite bachelor of arts in college, is relatively better trained for the work of the school than is the average physician who possesses merely the degree of doctor of medicine, for the practice of medicine. Very few young physicians of to-day, relatively to the number being graduated, have collegiate training, or prolonged experience within school-rooms, and, if literary degrees be any criterion of school experience they have less of this academic training than students in law or in theological schools. Note the recent statistics of the United States.¹

| Schools | Students | Number having Literary Degrees | Per Cent. |
|------------------|----------|-----------------------------------|--------------|
| 184 theological, | 11,012 | 3,064 | 28 |
| 114 law, | 19,567 | 4,107 | 21 |
| 135 medical, | 21,394 | 1,883 | 9 |

In the majority of physicians from whom we must choose our medical inspectors and school physicians, we observe neither academic training in general culture courses nor pedagogical training, such as is being demanded more and more of every teacher for the elementary, high and normal schools and colleges. Great is the need of the presence of the physician-inspector in the public school, but great also is his need of academic knowledge and of training in

¹ U. S. Ed. Report, 1910, Vol. II., p. 1017.

the essentials of pedagogy. To the average citizen the physician comes in moments of dependence and with a traditional prestige and with at least a modicum of technical knowledge which he may wield to the disadvantage of the layman. The partially trained physician in the presence of the problems of the school, naturally may suffer from a mental myopia from which he is unconscious and it is difficult to convince him of his ignorance where it exists. The pedantry of the confirmed pedagogue may have its counterpart in the professional assurance of the routine practitioner and the common, invalid assumption that "a man skilled in one thing is good at everything he undertakes."

If we are to bring about needed cooperation in the medical and teaching professions in life we must begin with fundamentals. We should labor with the professional training of those who are to work, either as teachers or physicians, in our schools. Already the medical profession has achieved greatness in the education of the people in the prevention of disease. Through literature, lectures, committee work, legislation and public-spirited activities, the beneficial effects of the noble work of prevention of disease is felt in every path of life. Magnificent are the results of the modern physician and sanitarian in the battle, *e. g.*, against yellow fever and the hook worm, or against tuberculosis. This country of modern cities with stupendous populations could not exist happily but for the public hygiene engineered by noble spirits in the medical profession.

In the schools we have millions of our population, the majority of our people during the years of plasticity and during years when they are amenable to a high degree of control. In the schools is the superlative opportunity for teacher and

physician cooperating to benefit the race. If it be agreed that both educator and physician should understand and practise school hygiene as only one of the increasingly numerous departments of a modern pedagogy, how can this knowledge and practise be affected without specific, organized training in hygiene, both for prospective teachers and prospective medical men, for the schools? Educational hygiene is but one division of the field of hygiene and demography. Consideration of its bare outlines as offered for discussion at the next international congress on hygiene and demography should yield the conviction that if this field is to be mastered, the medical and educational departments of modern universities are laggards in progress where effective cooperation is not accomplished.

In conclusion we may venture to enumerate four ways for effecting an immediate and practical cooperation between the educational and pedagogical departments of well-equipped universities.

1. With reference to the need of the schools, provisions should be made for senior medical students, and especially for graduates in the educational department, by instruction and training in the essentials of pedagogy to be chosen from courses and with books such as: "History of Education" (Monroe); "Principles of Education" (Bolton); "Educational Psychology" (Thorndike, Starch, Pyle, Bagley); "Educational Statistics" (Ayres, Thorndike); "Experimental Pedagogy" (Whipple, Meumann, Claparede). These presuppose a basal knowledge of psychology—some of which must be got in the laboratory. In this basal study of psychology of common interest to teacher and physician, the majority of medical students obtain no systematic training whatever, a fact not surprising since, according to Flexner's re-

port, half or more of the medical schools require less than a good high school course for admission; half have meager laboratory facilities even for physiology, pharmacology or bacteriology; teaching of anatomy and pathology is often didactic; clinical facilities are usually inadequate and many colleges are "reeking with commercialism." In medical departments where such deplorable conditions do not exist it seems most reasonable to supply instruction in general or introductory psychology, both to medical and pedagogical students, by utilization of the psychological laboratory of the academic department.

Medical students who undertake the work in pedagogy as prospective school inspectors or school physicians should undertake the extra training either in a graduate year or elect a minimum during the senior year of the medical course. This election would necessitate the elimination of certain fractions of pharmacology, obstetrics or studies not of essential use to the professional school physician. This questionable elimination, however, would be avoided by placing all of the pedagogical work, save the elements of psychology and of hygiene, in the post-graduate year or years. Since the writing of this paper, some interesting detailed suggestions regarding such adjustments of curricula have been offered under the title: "Professional Training for Child Hygiene" by Professor Lewis M. Terman, Ph.D. (*Popular Science Monthly*, March, 1912).

2. Appropriate courses in education should be offered prospective school nurses.

3. In recognition of the fact that throughout the country the majority of high-school teachers lack professional training in both the subject they teach and also in pedagogy, there should be a more general effort in our universities to supply the present need for professionally trained

teachers for high schools, whenever the bachelor's course is regarded as the maximum obtainable preparation. The college student who desires to become a specialist in school hygiene or a public sanitarian may omit the regular medical course and proceed from the bachelor's degree to the doctor of philosophy in hygiene or to the new degree of doctor of public health. In order to open this field to college men and women, candidates for the bachelor of arts in education should be permitted to follow hygiene as a major subject, extending through at least three years and properly correlated with other sciences, cultural and professional courses. In the courses, hygiene, preventive medicine, physiology and psychiatry, the medical department may be utilized. The following typical plan for grouping of studies for prospective teachers in college makes possible the choice of such a major subject and at the same time affords in the four years following the high school: (1) a basis of general culture in the languages, mathematics, sciences and history; (2) the essentials of pedagogy; (3) opportunity for increasing specialization under the direction of competent advisers.

| Freshman | Sophomore | Junior | Senior |
|--|--|----------------------------|-----------------------------------|
| Eng. 3 hrs. | Eng. 3 hrs. | Gen. & Ed. Phy. 5 hrs. | Hist. & Prin. of Education 5 hrs. |
| Lang. 3 hrs. | Lang. 3 hrs. | Educational Hygiene 3 hrs. | El. or Secondary Education 3 hrs. |
| Math. or Hist. 3 hrs. Phys. or Chem. 5 hrs. | Math. or Hist. 3 hrs. Biology (Physiology) 5 hrs. | Elective 9 hrs. | Elective 9 hrs. |
| Elective 3 hrs. | Elective 3 hrs. | | |
| Total 17 hrs. per week. | 17 hrs. | 17 hrs. | 17 hrs. |

The electives (major and related subjects) courses should be chosen under care-

ful guidance and with proper restrictions.

4. In the study of the school problems of elimination, retardation, repeating and of the exceptional child, the department of education should lead. The educational laboratory, and psychological clinic, an adjunct to the laboratory of psychology, is the point for concentration of effort upon these problems, by cooperation of psychologist, physician, sociologist and teacher. The demonstrated value of the modern psychological clinic must be rescued and preserved from the errors and excesses of incapable men and women, whether in medicine or in education.

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THE EDUCATIONAL WORK OF A GREAT MUSEUM¹

THE educational work of a museum should be governed entirely by the purposes for which the museum is established. The very greatest museums may give pleasure to the public, may educate the more intelligent groups of people, among which are college graduates, may educate such classes as teachers and children, and should not neglect the education of the masses. One of the most important services to education which a great museum can accomplish is to carry on surveys, explorations and original investigation, and it is only from such work that any facts are learned which may in turn be given out to mankind by means of exhibits, popular guide-books, scientific reports, lectures and contributions to encyclopedias, textbooks, popular magazines and newspaper accounts. Great care should be taken that research work is never neglected in the stampede for "popularization." Such great museums may also have departments for special

¹ An abstract of an illustrated lecture delivered, in anticipation of the opening of the Victoria Memorial Museum, the national museum of Canada, at the inauguration in Ottawa of free lectures to the people under school board control, November 10, 1911.